

The Application of Community Question Answering in Course Teaching

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Abstract—As a knowledge-sharing mode, Community Question Answering (CQA) take full advantage of the power of the users, better meet the needs of the users. CQA also will be applied to specific courses, and applied in specific teaching processes. Practice has proved that CQA not only enriched the course knowledge base constantly, but also gave full play to the advantages of learning with peer education and mutual assistance, which greatly arouse students' interest to explore by them and improved the efficiency in and out of the class. The study also further enriches and expands the study of CQA.

Keywords—CQA; CB-CQA; course; tag; knowledge experts; companion's mutual assistant

I. INTRODUCTION

In recent years, with the development of web2.0, various user-centric Community Question Answering(CQA) developed rapidly. It has become the main mode of online question and answer service. For example, Quora, Google Answers, Yahoo Answers and domestic Sina "Love asked," Soso ask, Baidu "know" and "ZhiHu" are some representative CQA.As of November 2015, Chinese CQA platform Baidu "know" has accumulated 400 million to solve the problem of more than 10 million. March 2013, "know" almost open registration to the public. Less than a year, registered users quickly climbed from 400,000 to 4 million [1]. Sina, relying on the strength of Internet users , 80% of the questions which submitted will be solved within 24 hours.

Online CQA providing a form of questions and answers have the information needs of the questioner and willing to share knowledge directly related to respondents together and allows the user to evaluate the existing content and retrieval, thereby providing a more direct and relatively search engine effective access to information [2]. The principle is the users own needs, driven by targeted questions, provide answers to the problem to other users in the community incentives to stimulate [3].

Currently, most of the CQA study groups focus on user behavior analysis, content quality testing and issue recommendation mechanism. Much research focuses on the specific application, although in recent years there have been a number of domestic and foreign, such as "New Oriental" asked it, tele-education and companion's mutual assistance platform, "Ao Peng" student solidarity it, point it like learning educational CQA, but because of quality problems, the number of member shrink quickly. The CQA specific to a particular

course is even rarer. At the same time, compared to the rapid development of CQA, vast majority of the current course extracurricular activities such as tutoring and question answering are teacher-centered, which use e-mail, BBS, QQ and other information and communication tools. Even with the micro-channel groups, discussion groups and other new models, because of a lack of knowledge and incentives for the group of active users they all seemed inefficient. And it also makes such models tend to be short-lived. It is difficult to effectively solve practical problems. In addition, although the existing online Answering System platform is specifically developed for the network, but it means of a single, universal is not enough [4]. According to relevant survey showed that online teaching effectiveness, Answering System currently used online and did not play a corresponding effect, 64.9% of the students think that problems cannot be timely feedback to the teacher is the biggest problem of network teaching, while 74 % of the students in learning about the biggest obstacle to the survey also raised the same issue [5]. Therefore a Course Based CQA (CB-CQA) with multi-answer question and specific answer to better reflect the companion's mutual learning assistant will accomplish much.

II. SYSTEM EXAMPLE

CQA-based education programs envisaged many applications. We have designed and developed a specialized CB-CQA for the course of Computer Professional English based on MVC architecture. As a computer professional teaching aids, it is specifically designed for professional English. Users can ask questions, answer questions, recommend answer, search, integration and user management ranks Answers community basic functions. The system is functional structure shown in Fig. 1.

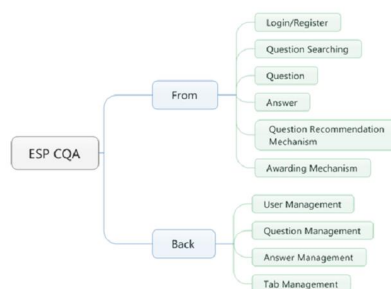


Fig. 1 System function block diagram

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At the same time, taking into account the special nature of CB-CQA, we made the following agreements:

First, we define the users and the types of problems in order to improve knowledge of the accuracy and relevance. As a computer professional English teaching assistant platform, its registered staff including class students, teachers and associated computer and English teaching experts. And we also make some norms and speak rules of the students. Doing so can prevent network transition open excessively, which will resulting decrease of the accuracy and target of knowledge base. Meanwhile, in order to prevent the problem too to flooding, reduce professional knowledge and targeted, CB-CQA platform allows only mention English or computer science related asked question. Problems search interface shown in Fig. 2.



Fig. 2 Problems search interface

Search page secondly, set up a searchable questions database; with answers to questions seek learning, teacher of experts to answer three levels of answer mode and means, as shown in Fig. 3.

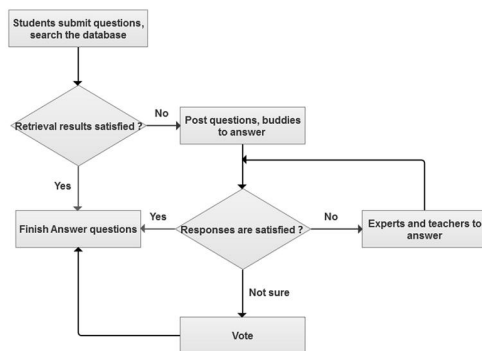


Fig. 3 three-tier approach and process Q

In this way, both to ensure the timeliness and effectiveness of answer mode, but also create a participatory, egalitarian atmosphere, in the course of answering maximize knowledge sharing between users. The first level of knowledge automatic search function, to avoid answering a question repeated occurrence. When the system users encounter problems in the curriculum learning and life, first in can "retrieval system" retrieve "knowledge base" of knowledge in whether there is a match, and if so, get answers; if not, then by the second level The "question the system" post your question or directly to teachers or experts question the high points. CB-CQA feature is available to all users, all the courses have curriculum learners or learners can participate in answering questions, which will help achieve peer education. If the answers given by the student to the other students are not satisfied, ask experts or

teachers for help, this is the third level. Different answers, screened by the users themselves form the best answer. If the student is unable to confirm whether the correct answer, you can launch other students to vote, in order to determine the correct answer. "Knowledge" can best answer new questions and stored, and constantly enrich the knowledge base system. At the same time, questions will be attached to a special tab, and the tab will be used as a source for statistical comparison of the types of keywords are popular, as shown in Fig.4.



Fig. 4 Tab page

From the analysis of the current CQA relevant studies, we found that patterns of behavior from the user point of view, CQA facts in question can be divided into categories, view class, or a combination of both Class 3 and CQA more conducive to resolving the class and comprehensive view of the problem [6]. But the non-facts type of problem can usually get more answers, a higher degree of user activity [7]. So as a highly professional course teaching assistant system, users are limited to the fact that the class question or view class problem, how to improve its user activity is particularly critical. Effective reward mechanism can fully mobilize the enthusiasm of students. We require the user to answer either question or can get the corresponding points, and the user is obliged to contribute to obtain an answer answers expert users or teacher ratings. Through the "knowledge experts" selection, and fully mobilize the enthusiasm of students to participate in and improve the quality of students' answers. By integration and other incentives, so that students get a sense of accomplishment in answering process, to fully mobilize the enthusiasm of students to participate in interactive and promote student autonomy to enhance their professional level and the overall quality, and to improve students' enthusiasm for learning and master degree and interest and importance of knowledge. In the CB-CQA, using the points system established evaluation system, to actively participate in the platform and exhibits good students give extra points, for outstanding students awarded the "knowledge experts" status, and rewards and privileges. And all points obtained by the user will be counted as a normal part of the course grade scores. It also further promotes the companion's mutual learning outside the classroom with effective happen. Specific points following rules:

1. The user each time to ask questions, integral +1 point.
2. The user every answer a question, +2 points
3. The user answer questions if they are selected as the best answer, +5 points
4. Each user has rights to contributions to answer user, +1-3 points.

5. The question was selected as top issues, integration, +2 points.

III. EFFECT ANALYSIS

After the system is completed, four classes major in computer science in Zhejiang International Studies University were chosen as the test users.

156 users use the track within a month shown in Fig. 5.

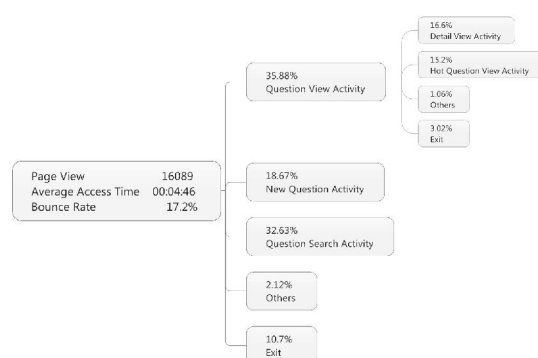


Fig. 5 User track

From which we can see into the CB-CQA system most users are willing to enter a detailed description of the problem (Detail View Activity) after viewing the list of the problem (Question View Activity). And most users did not quit after viewing, but chose to continue, indicating that the system is still popular with the students, while browsing interface in question, nearly half of the people chose FAQ Browse (Hot Question View Activity), visible set Popular tags set on hot issues is an effective means of questions and answers communities.

In addition, we also involved in student motivation from use, frequency of use, a simple anonymous questionnaire using the experience and so on, a total of 156 questionnaires, 132 valid questionnaires. The results showed that: Most of the students are to navigate and find relevant information, ask questions and seek help before using CB-CQA. There are also nearly one-third of the students chose to help students to answer questions, which has some relationship with our reward system, but more reflects the Internet with the spirit of companion's mutual assistance and learning. Visible, the CB-CQA also further promote the companion's mutual exchange of students to participate in courses and academic degrees between partners, specifically as shown in Table I.

TABLE I. MOTIVATIONS

Options	Number of people	proportion
Browse to find information	46	34.85%
Question seek answers	38	28.79%
Help answer questions	35	26.51%
Social needs	6	4.55%
Earn points	7	5.3%

At the same time as a professional with a closely related community, 85.6 % of students said that learning should basically every time the Internet. The questions and answers

used in a community, the higher user viscosity. User access trends at different times as shown in Fig. 6, which shows the course higher access to the CB-CQA, community visits increased significantly especially in the early creation stages and the time of final exam. This trend is in line with expectations, but also worthy of our consideration. Setting the stage for future incentives could be considered during the course of study, arranged after each lesson there is a certain degree of difficulty of extracurricular thinking questions, et, in the process, further to attract students.

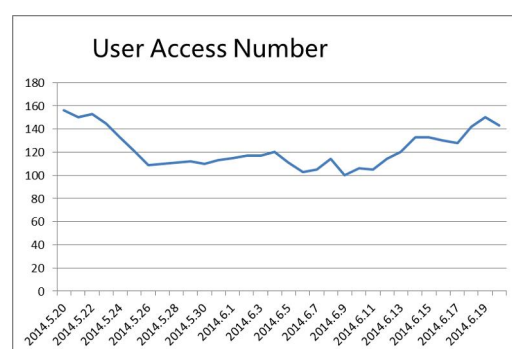


Fig. 6 User access trends

Finally, from the point of the experience of using, 54.5 % of students feel the community is essential, closely related to the course, it is to get an important channel of information and learning brought greater help. There are 30.3 % of students feel the community is one of the important channels to obtain knowledge and information programs on course brings some help, as shown in Table II. Visible, students of the high degree of dependence Answers community, students through the questions and answers of community-acquired valuable information is a useful supplement to the curriculum.

TABLE II. USING EXPERIENCE OF CB-CQA

Options	Number of people	proportion
The community is essential, easy to use, are courses An important channel	72	54.5%
The neighborhood is one of the channels to obtain course information is lesson Important information supplementary Cheng	40	30.3%
The community is optional	19	14.4%
The community is completely useless, no relevant information	1	0.8%
The community is essential, easy to use, are courses An important channel	72	54.5%

IV. SUMMARY

Compared to ordinary CQA, more specialized and targeted a CB-CQA is. Not only give full play to the role of knowledge

sharing advantages, but also changed in the past answering to teacher-centered model, utilized by the students of human resources, greatly improving efficiency. To form a student-centered discussion and collaboration atmosphere formed between students, usually results matching incentives for greater mobilization of the enthusiasm of the students and curriculum by integrating the community, to play with the spirit of companion's mutual learning within the course. Also, because the course participants are mostly members of the community and experts, who further ensures the user stickiness and quality of the CB-CQA. Practice has proved that the CB-CQA has played a better supporting role.

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